January 16th 2008, A. Pany

Comparison of 2e-15 @ 15 min and 1e-14 @ 15 min clocks with PPP CLSM

Specifications:

schedule: stat16_6_2p1D0ln

clk: ASD 1e-14 @ 15 min and 2e-15 @ 15 min, random walk + integrated random walk
zwd: Vienna turbulence (standard)
wn: 4/sqrt(2) ps per station

zwd: 6 min, 48 mm/h
grd: 6 min, 0.5 mm/h
clk: 1h (both clocks), 20 min (1e-14@15); 54 mm/h

The figures below show mean rms of zwd residuals (Figure 1), mean rms of clk residuals (Figure 2) and rms of 3D position error (Figure 3) for three different estimates: one with a clock with an ASD of 2e-15 @ 15 min where I used 1h segments for clk estimation, and two with a clock with an ASD of 1e-14 @ 15 min, where I once used 1h segments and once 20 min segments. rms of zwd residuals and rms of clk residuals both are significantly larger when using 1e-14 clocks. Using 20 min time intervals for clock estimation instead of 1h time intervals for the 1e-14 clock slightly improves rms of zwd (except for FT and TA, which get slightly worse), rms of clk are improved more significantly (again except for FT and TA). The rms of 3D position error, however, is not significantly influenced by clock accuracy!

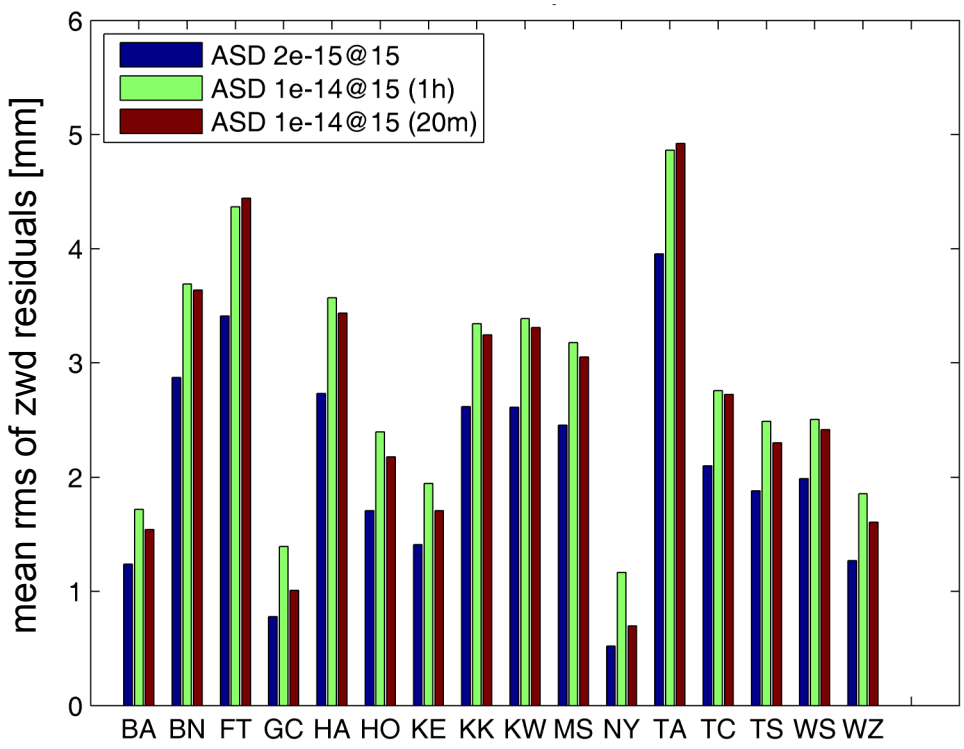

Figure 1 mean rms of zwd residuals for three estimates with different clocks and clock estimation intervals: ASD 2e-15 @ 15 min with 1h segments (blue), ASD 1e-14 @ 15 min with 1h segments (green) and ASD 1e-14 @ 15 min with 20 min segments (red)

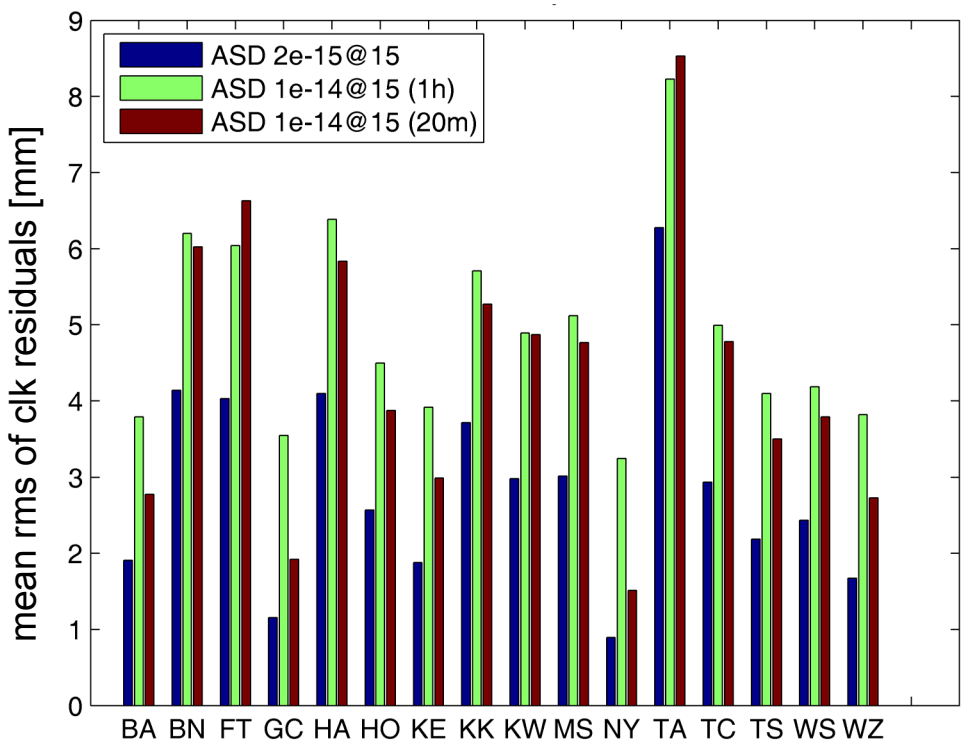

Figure 2 mean rms of clk residuals for three estimates with different clocks and clock estimation intervals: ASD 2e-15 @ 15 min with 1h segments (blue), ASD 1e-14 @ 15 min with 1h segments (green) and ASD 1e-14 @ 15 min with 20 min segments (red)

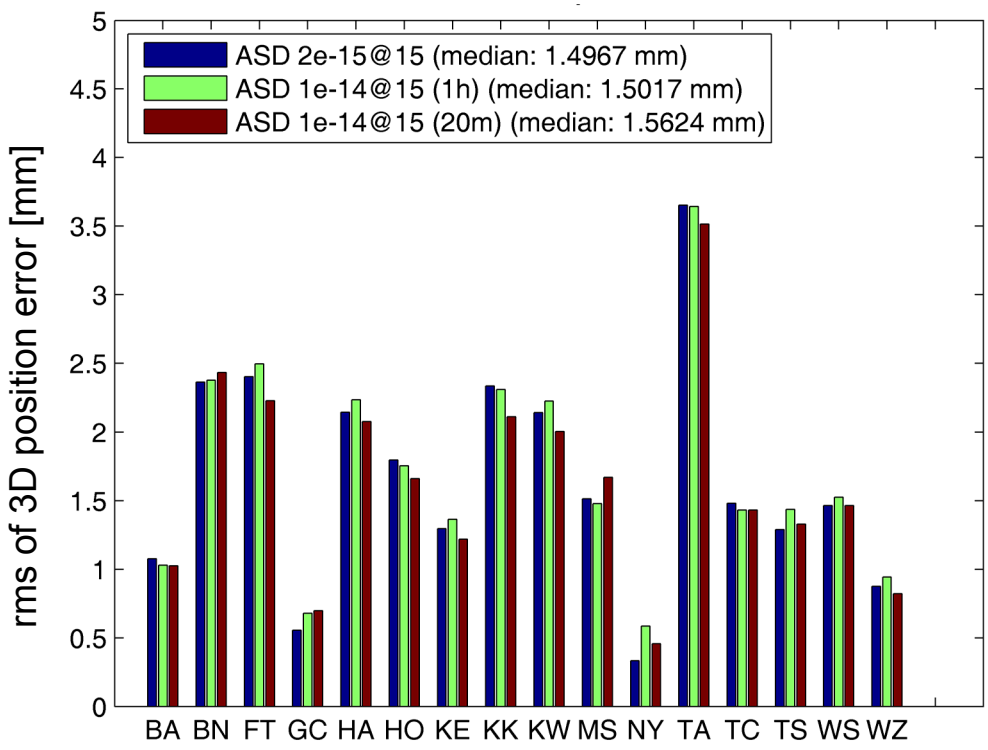

Figure 3 rms of 3D position error for three estimates with different clocks and clock estimation intervals: ASD 2e-15 @ 15 min with 1h segments (blue), ASD 1e-14 @ 15 min with 1h segments (green) and ASD 1e-14 @ 15 min with 20 min segments (red). The median rms of each estimate is given in the legend.